DOCUMENT RESUME

ED 332 880 SO 019 940

AUTHOR Newmann, Fred M.
TITLE Higher Order Thinking in the Teaching of Social Studies: Connections between Theory and Practice.
INSTITUTION National Center on Effective Secondary Schools, Madison, WI.
SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE Jun 87
CONTRACT G008690007
NOTE 23p.; An earlier version of this paper was prepared for the Conference on Informal Reasoning and Education (Pittsburgh, March 26-29, 1987).
PUB TYPE Information Analyses (070)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Abstract Reasoning; *Critical Thinking; Decision Making; Elementary Secondary Education; Empathy; Inferences; Logical Thinking; *Problem Solving; School Organization; *Social Studies; Staff Development; *Teaching Methods; *Thinking Skills

ABSTRACT

An attempt is made to synthesize the diverse perspectives on the teaching of thinking, especially in the area of social studies. A conception is developed that incorporates major theoretical orientations as well as the views of teachers. The conception emphasizes interpretation, analysis, and manipulation of information to solve problems that cannot be solved by routine application of previously acquired knowledge. Five main challenges emerged when the problems that social studies teachers who emphasized thinking wanted students to confront were considered: (1) empathy, (2) abstraction, (3) inference, (4) evaluation-advocacy, and (5) critical discourse. To promote thinking along these lines, the curriculum should stress a combination of in-depth content, skill-directed activities, and the reinforcement of thoughtful dispositions. Pedagogy should provide extensive student practice in problem solving, guided by substantial teacher feedback on students' work, along with increased student interaction with one another and community study. To support this, organizational changes such as reduced teacher load and more flexible scheduling are necessary. Ultimately, the successful promotion of higher order thinking in social studies will depend on increased opportunities for teachers to study and to discuss with colleagues the conceptualization of thinking, its application to social studies, conflicting priorities, and other obstacles that inhibit thoughtfulness. If decisions about specific pedagogy grow out of teachers' collaborative consideration of these issues, higher order thinking in social studies has a chance. (JB)

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ED332680

Higher Order Thinking in the Teaching of Social Studies: Connections between Theory and Practice

Fred M. Newmann
University of Wisconsin, Madison
June, 1987

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An earlier version was prepared for the Conference on Informal Reasoning and Education, sponsored by OERI and LRDC, Pittsburg, March 26-29, 1987.

This paper was prepared at the National Center on Effective Secondary Schools, School of Education, University of Wisconsin-Madison which is supported in part by a grant from the Office of Educational Research and Improvement (Grant No. G-008690007). Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the author and do not necessarily reflect the views of this agency or the U.S. Department of Education. Thanks to Catherine Cornbleth, Larry Cuban, Michael Hartoonian, Alan Lockwood, Cameron McCarthy, Joseph Onosko, Francis Schrag, and Robert Stevenson for reactions to the manuscript and to forty high school social studies teachers nationwide who shared their views on the problem.

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This paper interprets for the field of social studies the recent avalanche of general literature on the teaching of thinking.[1] It confronts two main questions: What is higher order thinking in the teaching of social studies? and How can it be promoted? The intent is to synthesize diverse perspectives in a way that informs teachers' thinking about curriculum and teaching and also communicates to researchers those teacher concerns that should be taken into account if future research on the topic is to speak more directly to social studies teachers.[2]

I What is Higher Order Thinking in Social Studies?

A variety of conceptions of thinking have been proposed for social studies. The more thorough formulations have been conceptualized as critical thinking (Beyer, 1985; Ennis, 1962; Feeley, 1976; Giroux, 1978), reflective thinking (Hunt and Metcalf, 1968), social scientific inquiry (Barr, Barth and Shermis, 1977; Morrissett, 1967), and jurisprudential reasoning (Oliver and Shaver, 1966). Since each of these, and others, can be justified through persuasive rationales, and they often incorporate common elements, is not productive to try to choose the best. It would make more sense to search for a common conception that embraces diverse emphases but which attracts professional consensus.

The common conception would be strengthened if it reflected scholarship on thinking beyond the social studies literature. This scholarship, too vast to synthesize here, identifies the nature of problems (e.g. well-structured, ill-structured; descriptive, analytic, prescriptive; academic, practical); describes the processes or approaches we use to think about problems (e.g. deductive and inductive reasoning; formal and informal reasoning; stages of moral reasoning; analytic and creative thinking; concrete and abstract thinking; expert and novice thinking; metacognitive strategies); and offers general models of intelligence or the workings of the mind (e.g. associationist, gestalt, developmental and information processing theories).[3] The conception of higher order thinking proposed below is consistent with much of this literature.

A. A Conception of Higher Order Thinking

Any human mind that receives stimuli from the environment engages in thought - in the sense that the brain functions to code, store and to process information. Further, almost all cognitive processes, from watching TV commercials to reading road signs, are "complex" in a neurological sense. What, then, distinguishes higher order thinking from other forms of thought?

The diverse conceptions of thinking should not obscure a fundamental distinction between higher order and lower order thinking that is alluded to in numerous observations of the quality of thought in school classrooms. The consistent observation is that schools are dull places in which many students are rarely challenged to use their minds (Cuban, 1984; Goodlad, 1984; Perrone, 1985; Powell et al, 1985).[4] This assessment of instruction expresses a simple, general criterion: higher order thinking signifies challenge and expanded use of the mind; lower order thinking signifies routine, mechanistic application and constraints on the mind.

Challenge or the opportunity to expand the use of mind occurs when an individual must interpret, analyze, or manipulate information, because a question to be answered or a problem to be solved cannot be resolved through the routine application of previously learned knowledge.[5] The explorer trying to travel successfully over unknown terrain illustrates the idea that previously acquired knowledge and skills (e.g. map and compass use, knowledge of weather or survival techniques) must be applied in a new situation to reach the destination. Success requires considerable knowledge, but, because of the novelty of the task, <u>how</u> to apply the knowledge poses a significant challenge.[6]

In contrast, "lower order" thinking involves repetitive routines such as listing information previously memorized, inserting numbers into previously learned formulae, or applying the rules for footnote format in a research paper.

This definition emphasizes a critical dimension: using, or going beyond the information that one has previously acquired in order to solve a problem. Tasks of this sort appear in many forms: in well- or ill-structured problems (within social studies, the latter often seem more challenging), in academic or practical problems. They may involve descriptive issues (How did the economy of the South depend upon slavery?), or ethical and prescriptive issues (Under what conditions, if any, can violence against a government be morally justified?). Their solutions can involve deductive reasoning, inductive reasoning, formal and informal reasoning, analytic thinking, creative thinking and metacognition.[7]

This conception stipulates what an individual should do with information (interpret, analyze, manipulate), and the occasion necessary to provoke such use (a challenging problem). Individuals differ, of course, on the kinds of problems they find challenging. For one person, trying to understand how to read and follow a bus schedule may require higher order thought, but for another, the same task will be routine. In this sense, higher order thinking is relative: to determine the extent to which an individual is involved in higher order thinking, one would presumably need to know much about the person's

history. Furthermore, to assess the extent to which an individual actually participates in the analysis, interpretation and manipulation of information, one would want to "get inside" the person's head or experience his/her subjective state of thought. This, of course, poses an operational problem. It may be difficult to determine reliably the extent to which a person is involved in higher order thinking.

Teachers interacting with several students at once have little opportunity to assess students' individual mental states. Instead, they must make assumptions about the prior knowledge of groups of students and about the kinds of mental work that certain tasks are likely to stimulate. The teaching of thinking, therefore, is an imprecise enterprise, but to the extent that our assumptions about students' prior experience are correct, we can pose appropriately challenging problems. The goal is to engage students in what we predict will be challenging problems, guide their manipulation of information to solve them, and support their efforts. From this point of view, the curriculum of a program designed to promote thinking could be described in terms of the types of challenges in the analysis, interpretation and manipulation of information it presents, and the pedagogy could be described in terms of the types of guidance and support offered (e.g. the teacher's approach to providing expository knowledge, coaching and reinforcement for students).

Rather than investigating specific conceptions such as critical thinking, informal reasoning, moral reasoning or divergent thinking, we offer a much more general conception of higher order thinking. Why? First, observational studies dramatize the need for a broad conception, because they show that at best, much classroom activity fails to challenge students to use their minds in <u>any</u> valuable ways; at worst, much classroom activity is nonsensical or mindless. The problem, therefore, is not necessarily the absence of particular types of thinking, but more fundamentally the absence of thoughtfulness. Second, our experience with history and social studies teachers indicates that calls for specific types of thinking (e.g. critical, inductive, moral) is unlikely to generate widespread consensus for any particular type. Instead, social studies teachers are likely to perpetuate their previous emphases upon a plurality of types of thinking, but even these will be grounded primarily in the teaching of their <u>subjects</u>. Thus, a broad conception of thinking, adaptable to a variety of content and skill objectives, is more likely to affect practice at large.[8]

We know from teachers and from research that thinking cannot be promoted except as a response to problem solving about some specific content or subject. To conceive of higher order thinking within a subject area, we must, therefore, try to articulate the types of terrain that challenge the explorers within the territory.

B. Special Challenges in Social Studies

Content challenges in social studies could be listed as the specific concepts, explanations, and issues studied, but numerous such lists have already been prepared by curriculum projects and committees. Here we construe countless pieces of specific content as a smaller set of generic higher order expeditions on which many teachers would like to guide their students, but which present persistent obstacles. The challenges below may not be unique to the social studies field, but we see them as the core of its higher order dimension.

(1) Empathy. Social studies seeks to expand students' social experience across time, space and culture to gain a more complex perspective on their own lives. To find meaning in the life of classical Athens, in the tragedy of the Holocaust, or in the teachings of Buddha, involves extending the mind and spirit beyond the tangible, the concrete, the familiar. The challenge here is not simply to learn new vocabulary, but to see and to feel the world from another's point of view. To reason about moral problems, to explain the puzzles of cultural variation, to hypothesize about historical causation, students must incorporate into their own thinking the experience of others. The task of reorganizing one's understanding of human affairs to assimilate and accommodate "foreign" information is a formidable cognitive task, especially since it is not possible for students to encounter these experiences directly. Lives and institutions must be represented - by authors, film producers, and teachers who try to move students to incorporate, identify with, and ponder circumstances beyond the familiar.

(2) Abstraction. We rely upon claims, concepts, and theories that describe concrete activity in more general language. Such abstraction helps to interpret, analyze and manipulate information, because it can offer powerful insights into the nature of social experience. History and social science introduce abstractions not likely to be encountered elsewhere (e.g. Plato's discussion of virtue, Marx's analysis of class, King's observations on non-violent protest). Social studies lessons dwell upon abstractions: the nature of colonialism, checks and balances in a Federal system, the causes of economic depression, the manifestations of racism or the dynamics of global interdependence. Teachers consistently worry about whether students can really use these concepts to make sense of social events. Will they will transfer their knowledge of the US Constitution to understand issues in the contemporary criminal justice system? Can they can use economic principles to explain a rise or decline in employment? Unfortunately, abstractions are often taught only didactically as vocabulary, and students are asked only to reproduce what has been said by teacher or text. But when teachers help students to use abstractions to go beyond

the information given to solve new problems, they promote higher order thinking.

(3) Inference. Drawing inferences from limited data is central to the work of historians and social scientists, and to understand these subjects, social studies teachers want students to struggle with inferential challenges. To determine who provoked the violence that launched the American patriots' rebellion against England, for example, teachers may ask students to scrutinize historical evidence and possible bias of the observers at Lexington and Concord. They may ask students to draw conclusions on the general causes of war, or to predict the effects of increased interest rates on employment. As teachers encourage students to ask, "why" - to develop explanations of the past, or predictions of the future, they invite the formulation and substantiation of inferences. Making and defending inferences involves higher order thinking, because, by definition, inference entails going beyond the information given to draw conclusions.

(4) Evaluation and Advocacy. Social studies teachers want students to make and to intelligently defend value judgments about what is good, right, and just in public life. Was it right for American colonists to use violence against England? What are positive and negative consequences of the industrial revolution? In what ways, if any, should the state promote cultural traditions of minority groups? What economic-political system is most likely to meet human needs equitably? What limits on national sovereignty are warranted in order to assure world peace? Such evaluative tasks are the lifeblood of democratic citizenship, and citizens' decisions on such issues presumably influence the selection of leaders and the effectiveness of public policy. To the extent that citizens refrain from this sort of problem solving, or if they do so unintelligently, consent of the governed becomes a farce.

Many problems calling for evaluation and advocacy have no correct answer, and since they are emotionally charged, they harbor obstacles to objective analysis. Working toward a defensible position may include each of the previous challenges of empathy, abstraction and inference, but in addition, one must arrive at evaluative criteria. These may be introduced formally in the study of history and the disciplines (e.g. economic equality, social harmony, technological progress, individual liberty, fairness, national security, short-term vs long-term benefit), but the criteria are usually problematic. Deciding which evaluative criteria to apply lies at the root of inquiry in social studies, but strategies for resolving such issues have received little attention in the research on thinking.

(5) Critical Discourse - An Overriding Issue. Social studies teachers committed to higher order thinking stress the importance of students

thinking independently and critically. They applaud students who ask the unconventional question, who dare to defend a dissenting point of view. They value students who generate their own solutions to problems in their own language and who participate actively in dialogue and in argument - written and oral. In short, they characterize good thinkers as those who generate critical discourse in their coping with the challenges of empathy, abstraction, inference and evaluation.

"Critical" represents the tendency to question the information given as facts, concepts, conclusions, assumptions or the logic of argument and to ask questions that cast the information in a new light. "Discourse" refers to language produced by the student with the intention of providing a narrative, argument, explanation, or analysis. Most school activities invite neither critical responses, nor discourse. More frequently, students are asked simply to acquire information, and to demonstrate this either by choosing whether language supplied by others constitutes a correct response to questions posed by others (multiple choice tests), or by repeating to the appropriate cue, short phrases in language that others have used (fill-in-the-blank exercises).

Teachers committed to critical discourse face at least two serious problems. The first is that critical inquiry can be disquieting. It asks us to demystify what has been taken for granted, to search for exploitation or contradiction in relationships that on the surface may appear voluntary and harmonious, to continue to work for a better world rather than accepting what we have. Even in the most supportive settings, humans have great difficulty subjecting their beliefs to continuous scrutiny, resolving ambiguity and contradiction, and sustaining interest in abstract issues of justice. In short, for many people, critical inquiry is likely to involve a painful struggle, not an immediate sense of joy, growth, or positive accomplishment. Second, the very task of expression or production of discourse is often exceptionally difficult for students. They have few opportunities to speak or to write in several sentences, even fewer opportunities to receive constructive feedback about their use of language to convey complex ideas. Peer culture can also inhibit intelligent oral dialogue in the classroom.

To summarize, higher order thinking is interpreting, analyzing, manipulating information to go beyond the information given, and in social studies such exploration is likely to address five central challenges: empathy, abstraction, inference, evaluation-advocacy, and critical discourse. Having conceptualized higher order thinking and described special challenges encountered by those social studies teachers committed to it, now consider what is needed to promote it.

II What Will Promote Higher Order Thinking in Social Studies?

The intellectual terrain that students and teachers traverse in school depends on many factors. To enhance higher order thinking in social studies, we suggest directions for curriculum, pedagogy, school organization, and staff development, but first an overview of relevant research is in order.

Evidence exists that many forms of thinking have been successfully taught. Research on the teaching of public issues (Oliver and Shaver, 1966; Levin et al, 1969) indicates, that students can be taught to solve ill-structured descriptive, analytic and prescriptive problems dealing with public controversy. Studies of school effects and of more specialized instruction in specific disciplines show that students learn to solve academic problems (Voss, in press). Research indicates some success in teaching deductive and inductive reasoning (Herrnstein et al, 1986; Lipman, 1985), in moving students from preconventional to conventional reasoning (Rest, 1986), and in teaching informal reasoning (Perkins, 1986). Similarly, studies can be found that show success in teaching creative thinking (Perkins, 1984), metacognitive strategies and information processing activities (Covington, in press; Palinscar & Brown, 1984).

This may lead to the optimistic conclusion that just about any kind of thinking can be taught to some degree. On the other hand, the work within social studies is so fragmented that we know very little about the extent to which different types of thinking can be taught by specific curricula and teaching techniques.[9] A lack of replication and proper experimental design, along with a failure to use common dependent variables and common treatment variables, have prevented the accumulation of knowledge. A possible exception is in moral development where a more coherent research tradition has evolved, but elsewhere there is little replication and almost no information on effect sizes. Although empirical research in social studies has not been directed toward the particular conception of thinking outlined here, it is important, nevertheless, to anticipate its implications, and to make use of research from related areas.[10]

A. Curriculum

Research suggests that curriculum should emphasize three dimensions: content, skills, and dispositions.

1. Content

Sophisticated understanding or the mastery of complex challenges is demonstrated through in-depth knowledge of a subject, whether it be consumer decision-making or interpretation of poetry. If students are

to master the challenges of empathy, abstraction, inference and evaluation, they must know a good deal about the subject at hand. Of course, subjects can be taught in ways that fail to promote thinking, but thinking cannot be taught apart from knowledge of subjects. Some would argue that the proper teaching of any subject is equivalent to promoting higher order thinking, because it should teach students to use, manipulate and to interpret knowledge in the subject in order to face new challenges within the area.[11]

History and social studies suffer from two main problems in the teaching of content. The first is, "What content or topics should be taught?" Because of a multiplicity of disciplines within the field, the explosion of knowledge, and the lack of powerful hierarchical structures of knowledge within fields, selection of topics is problematic. The second problem, with more negative consequences for the promotion of thinking, is the tendency to offer extensive superficial surveys on many topics, rather than sustained, in-depth coverage of a few. Most textbooks span such a range of knowledge that only superficial coverage can be given to each topic. Testing programs require students to show knowledge of isolated fragments from the entire span, rather than how they think about problems in depth. Teachers express frequent frustration that they are continually behind in covering the material. The demands for coverage leave little time for careful reflection to manipulate and interpret the knowledge students may have acquired. If higher order thinking is to be promoted in social studies, much of the content currently covered should be omitted and replaced by more in-depth study of a smaller number of topics.

2. Skills

Good thinkers are often described as having special skills, for example, the ability to identify problems, state alternative solutions, offer evidence, judge logical consistency, detect bias, and find new sources of information. In addition to general skills, high quality thinking in specific subjects is said to depend upon domain-specific skills such as solving quadratic equations in mathematics, use of laboratory equipment in science, or jurisprudential reasoning in social studies. In short, those who stress a curriculum of skills maintain that content alone is insufficient, that students must be taught specific techniques, including metacognitive strategies, for analyzing, interpreting, and manipulating content. A number of curriculum plans and teacher training programs prescribe special activities to teach particular skills.[12]

The effort to enumerate the skills that constitute higher order thinking can usefully focus attention on educational goals other than the didactic transmission of information. But whether thinking can be

adequately conceptualized as a particular set of skills and whether those skills can be taught to be transferred beyond a highly specific application is questionable. Problems with a skills orientation, not to be elaborated here, include tautological definition; excessive specificity on the one hand and generality on the other; an untenable distinction between skills and knowledge; and the importance of insight, wisdom and dispositions for integrating discrete skills to solve problems.[13]

In spite of these difficulties, a skills perspective can contribute to curriculum for higher order thinking, because it generates activities beyond gathering of information that must be conducted in order to participate in disciplined inquiry. These activities include scrutinizing arguments for logical consistency; distinguishing between relevant and irrelevant information, and between factual claims and value judgments; using metaphor and analogy to represent problems and solutions; rhetorical strategies such as stipulation of disputable claims to let an argument proceed; discussion strategies such as asking for clarification, pressing people to stay with an issue, summarizing the progress of the conversation. Isolating and labeling such activities is helpful in building curriculum, but we must remember that the tasks can be meaningfully undertaken only if directed toward knowledge about some subject. In this sense, successful completion of the tasks must be seen not as mastery of content-free technique, but as the use of procedural and substantive knowledge to meet challenges posed by specific subjects.

3. Dispositions

Higher order thinking requires something even more fundamental than the mastery of content or skills, namely, an underlying disposition of thoughtfulness. Thoughtfulness consists of several traits: a persistent desire that claims be supported by reasons (and that the reasons themselves be scrutinized); a tendency to be reflective - to take time to think problems through for oneself, rather than acting impulsively or automatically accepting the views of others; a curiosity to explore new questions, and the flexibility to entertain alternative and original solutions to problems. Thoughtfulness thereby involves attitudes, personality or character traits, and general beliefs or "world views" about the nature of knowledge (e.g. that knowledge itself is socially constructed, subject to revision and often indeterminate, and that thinking can lead to understanding and solution of problems). Content and skills will be important for the mastery of particular challenges, but without a disposition of thoughtfulness, content and skills can be taught and applied mechanistically and nonsensically. In short, thoughtfulness must be reinforced in the curriculum as a necessary, though not sufficient condition, for higher order thinking.[14]

Consistent findings of low levels of thoughtfulness in school classrooms indicate significant cultural barriers. Compared to other objectives for schooling, and in spite of rhetoric on thinking skills, thoughtfulness receives little attention from parents and policymakers. As indicated above, higher order thinking requires the resolution of conflicting views, tolerance for uncertainty and ambiguity, self-criticism, independence of judgment, serious consideration of ideas that may challenge conventional wisdom. In short, it involves hard mental work, and because it may also threaten existing personal or group interests, the results may not always be rewarding for the student. For many, it is more satisfying simply to take in the information dispensed and to reproduce it for teachers, employers, test-makers. Some students work hard to master the information dispensed so that they may succeed in life, but even for these, the goal is often to gain success with minimal mental effort - "Why think if you don't have to?"[15]

There may be a cultural press to avoid thoughtfulness, but we know that students can become intensely engaged in and excited about problem solving in social studies. Research is lacking on the extent to which thoughtfulness can be deliberately taught to individual students, but we have seen social studies classes where it is rewarded and celebrated. If higher order thinking is to be promoted, this dimension of the curriculum needs far more attention.

In summary, the curriculum should include in-depth knowledge as the foundation of problem-solving; skills to direct attention toward tasks that require the analysis, interpretation and manipulation of knowledge; and support for the disposition of thoughtfulness to encourage an intelligent and committed approach to the use of information. Although these elements have been separated and distinguished for the purpose of analysis, the analysis has hopefully indicated considerable interdependence. In reflecting upon curriculum for higher order thinking, it is useful to consider them separately, but if inquiry is to be authentic in practice, the dimensions will be integrated.

B. Pedagogy

The conception of thinking and curriculum advanced here has several implications for pedagogy.

1. Since the ultimate challenge is to solve problems by analyzing, interpreting and manipulating information, rather than absorbing it, pedagogy must concentrate on <u>active</u>, rather than passive, forms of student work. This calls for individual quiet study, to be sure, but

it also requires students to express themselves orally and in writing, and to physically manipulate information and artifacts.[16]

2. Since higher order thinking demands in-depth knowledge of subjects, and since students generally have so little information about important problems of history, social science or citizenship, pedagogy must be devised which helps to communicate this information, but which minimizes spoon-feeding and student passivity. We need problem-solving activities which themselves provoke students to acquire new information and which displace the often tedious routine of learning information first, then solving a problem.[17]

3. To advocate that students become more active problem solvers is not to suggest a more passive role for the teacher. The challenges of empathy, abstraction, inference, evaluation, and critical discourse, require teachers to respond to students' work more extensively and elaborately than is necessary when transmitting information. In contrast to some subjects such as music, manual crafts, or sports, in which success is often obvious to the student, problem solving in social studies offers few intrinsic cues of success or failure. Right answers are not often apparent, and students must rely continuously upon teachers for feedback about success, failure, the reasons therefor, and how to proceed. Generating effective oral and written discourse requires special help from teachers. In this sense, teachers also must become more active, and many view this as is more difficult work.

3. The topic of pedagogy implies a search for techniques proven to be effective, but there are several reasons why we should temper the quest to discover a highly specific set of "best" teaching techniques.

Research has shown important differences in information processing between expert and novice problem-solvers, but the work to date has not been able to attribute differences to specific pedagogical interventions.[18] It is, therefore, reasonable to conclude that expertise is gained largely through extensive experience and practice. Since students have had almost no practice in facing higher order challenges in the social studies, we ought first to vastly increase the amount of practice with diverse, wide-ranging forms of problem solving, and to learn from these more global interventions before investing in the fine-tuning of pedagogy.[19]

Because of the many types of problems toward which thinking in social studies might be directed, and the multitude of knowledge bases and skills that might be taught, extensive research and development in pedagogy could well lead to increasingly fragmented lines of inquiry - balkanized into studies of all the different ways of teaching skills

a-z to solve problem types 1-n. Such specialization would become ever more difficult to synthesize usefully for practitioners.

Finally, much of our apparent pedagogical ignorance is created by the environments in which we are forced to teach. Many teachers do know how to promote higher order thinking in social studies. The mystery arises when this must be accomplished with 30 students of vastly diverse motivation and knowledge, meeting in one room, within a fifty minute period each day, with curriculum guidelines for content coverage that prevent in-depth reflection, and when the teacher must also respond daily to 100 additional students in similar circumstances. Rather than inventing pedagogical miracles to respond to this teaching environment, it might be wiser to create environments that allow existing pedagogical knowledge to be used.

C. School Organization

What kind of an environment is needed to help students manipulate information in response to the challenges of empathy, abstraction, inference, evaluation, and critical discourse? As indicated above, there must be ample opportunity for extensive interaction between students and teachers. The challenges often also require opportunities for cooperative work in which students help one another through criticism, division of labor, and comparison of perspectives. Because the problems to be explored vary substantially, they are most productively studied in flexible time periods, rather than in identical routine blocks. Finally, developing empathy, perceiving the concrete meaning of abstractions, and constructing more defensible evaluative judgments of the social world often requires study beyond the classroom; more contact with the outside community is necessary.

To build such conditions, changes in school organization such as the following should be pursued: (a) reduced teacher load and class size to provide more opportunity for teacher feedback on individual work; (b) flexible scheduling of classwork to allow more sustained, continuous investigation of problems than is possible in the 50 minute period, 5 days a week; (c) reduction in the number of separate courses that students take simultaneously (to further support in-depth study); and (d) increased opportunity for community study. Organizational change is a necessary, though not sufficient, condition for the promotion of higher order thinking, because organizational change alone is unlikely to alter curriculum and pedagogy without appropriate changes in teachers' conceptions of their work.

D. Staff Development

The thrust of this analysis is that our failure to promote higher order thinking in social studies is due not primarily to a lack of knowledge

of technique, but rather to a lack of an informed, reflective commitment to the goal. Teachers, of course, are the key, and while many agree with the general goal, they face substantial obstacles. As indicated above, some arise from organizational constraints and external pressures. Others, however, are rooted in philosophical confusion, persisting dilemmas of teaching, and pedagogical tradition that teachers have had few opportunities to examine. Teachers need more opportunity to build self-conscious conceptions of thinking that resolve some of these matters. Our clarification of challenges central to social studies and our discussion of content, skills and dispositions hopefully offer a foundation on which to build. But even this analysis leaves much unfinished business. Teachers will need to interrogate their own priorities as they face such persisting dilemmas as how much breadth must be sacrificed for depth of understanding, how much knowledge students must master before they can be considered "ready" to solve problems, how directive the teacher should be in both transmission of knowledge and its analysis.

A particularly vexing issue is the problem of student resistance: their apparent avoidance of rigorous problem solving activity, because they seem to prefer the comfort and familiarity of well-defined algorithmic tasks, simple answers, the absence of conflict.[20] The solution to this problem depends in part on how we understand its sources.

Resistance could be explained as information deficit: students find it unrewarding to concentrate on problem-solving, because they lack information on most topics presented in history and social studies. It could be attributed to an innate psychological condition or a developmental deficit: humans naturally resist ambiguity and conflict in favor of certitude and harmony or young people have not developed sufficient powers of abstract cognitive thought. It could be the result of social conditioning which has reinforced a self-fulfilling "lower order" mindset about knowledge and inquiry in school. The mindset may include several beliefs: most knowledge is certain, rather than problematic; knowledge is created primarily by outside authorities, not within oneself; knowledge is to be comprehended and expressed in small, fragmented chunks; knowledge is to be learned as quickly as possible, rather than pondered; knowledge may seem counter-intuitive or mysterious with respect to one's experience, but should be believed anyway; arguments and conflict about the nature of knowledge are personally risky, because winners are favored over losers. To generate more student engagement in thinking, such sources of student resistance must be considered more carefully by teachers and researchers alike.

Previous research on educational change dramatizes the necessity of extensive teacher involvement in the conception, execution and evaluation of educational innovation to generate the sense of ownership

required for useful long-term implementation. The complexities of promoting higher order thinking in social studies, therefore, demand a sizable commitment to staff development.

III Summary

Approaches to the study of thinking are so diverse that scholarship in the field has been characterized as a "conceptual swamp" (Cuban, 1984). I have attempted, nevertheless, to develop a conception which incorporates major theoretical orientations as well as the views of teachers. The conception emphasizes interpretation, analysis and manipulation of information to solve problems that cannot be solved by routine application of previously acquired knowledge. I considered numerous problems that social studies teachers who emphasize thinking want students to confront, and five main challenges emerged: empathy, abstraction, inference, evaluation-advocacy, and critical discourse. To promote thinking along these lines, the curriculum should stress a combination of in-depth content, skill-directed activities, and the reinforcement of thoughtful dispositions. Pedagogy should provide extensive student practice in problem solving, guided by substantial teacher feedback on students' work, along with increased student interaction with one another and community study. To support this, organizational changes such as reduced teacher load and more flexible scheduling are necessary. Ultimately, however, the successful promotion of higher order thinking in social studies will depend upon increased opportunities for teachers to study and to discuss with colleagues the conceptualization of thinking, its application to social studies, conflicting priorities such as depth versus breadth, and other obstacles such as student resistance that inhibit thoughtfulness. If decisions about specific pedagogy grow out of teachers' collaborative consideration of these issues, higher order thinking in social studies has a chance.

References

Adler, M. (1982). The paideia proposal: An educational manifesto. New York: Macmillan.

Armento, B. J. (1986). Research on teaching social studies. In M. C. Wittrock (Ed.), Handbook of research on teaching, 3rd edition (pp. 942-951). New York: Macmillan.

Barr, R., Barth, J. L., & Shermis, S. S. (1977). Defining the social studies, Bulletin 51. Arlington, VA: National Council for the Social Studies.

Beyer, B. (1985). Critical thinking: What is it? Social Education, 49:4, 270-276.

Bloom, B. S. (Ed.). (1956). Taxonomy of educational objectives: The classification of educational goals, handbook I: Cognitive domain. New York: Longmans, Green.

Brown, A. L., Bransford, J. D., Ferrara, R. A., & Campione, J. C. (1983). Learning, remembering , and understanding. In J.H. Flavell & E. M. Markman (eds.), Cognitive development (Vol. III of P. H. Mussen, Ed., Handbook of child psychology, pp.77-166). New York: Wiley.

Chance, P. (1986). Thinking in the classroom: A survey of programs. New York: Teachers College Press.

Chi, M.T.H. & Glaser, R. (1986). Problem-solving ability. In R.J. Sternberg (Ed.), Human abilities: An information processing approach. New York: W.H. Freeman.

Chipman, S.F, Segal, J.W. & Glaser, R., (Eds.). (1985). Thinking and Learning Skills, Vol. 2: Research and open questions. Hillsdale, NJ: Lawrence Erlbaum Assciates.

Cornbleth, C. (1985). Critical thinking and cognitive processes. In W. B. Stanley (Ed.), Review of research in social studies education: 1976-1983. Boulder, CO: ERIC Clearinghouse for Social Studies/Social Science Education.

Costa, A. (Ed.). (1985). Developing minds: A resource book for teaching thinking. Alexandria, VA: Association for Supervision and Curriculum Development.

Covington, M. V. (in press). Instruction in problem-solving planning. In S. L. Friedman, E. K. Scholnick, & R. R. Cocking (eds.), Blueprints for thinking: The role of planning in cognitivite development. Cambridge: Cambridge University Press.

Cuban, L. (1984). Policy and research dilemmas in the teaching of reasoning: Unplanned designs. Review of Educational Research, 54(4), 655-681.

de Bono, E. (1983). The direct teaching of thinking as a skill. Phi Delta Kappan, 64:10, 703-708.

Denham, C. & Lieberman, A. (Eds.). (1980). Time to learn. Washington, DC: National Institute of Education.

Ennis, R. H. (1962). A concept of critical thinking. Harvard Educational Review, 32(1), 81-111.

Feeley, T. Jr. (1976). Critical thinking: toward a defintion, paradigm and research agenda. Theory and Research in Social Education, 4:1.

Feuerstein, R., Rand, Y., Hoffman, M.B., & Miller, R. (1980). Instrumental enrichment: An intervention program for cognitive modifiability. Baltimore, MD: University Park Press.

Giroux, H. (1978). Writing and critical thinking in the social studies. Curriculum Inquiry, 8:4.

Glaser, R. (1984). Education and thinking: The role of knowledge. American Psychologist, 39, 93-104.

Goodlad, J.I. (1984). A place called school: Prospects for the future. New York: McGraw Hill.

Herrnstein, R. J., Nickerson, R. S., De Sanchez, M., & Swets, J. A. (1986). Teaching thinking skills. American Psychologist, 41:11, 1279-1289.

Heyns, B. (1978). Summer learning and the effects of schooling. New York: Academic.

Hunt, M. P., & Metcalf, L. (1968). Teaching high school social studies. New York: Harper & Row.

Kohlberg, L. (1981). The philosophy of moral development: Moral stages and the idea of justice. New York: Harper & Row.

Levin, M., Newmann, F. M., and Oliver, D. W., (1969). A law and social science curriculum based on the analysis of public issues. Final report. Cambridge, MA: Graduate School of Education, Harvard University.

Lipman, M. (1985). Thinking skills fostered by philosophy for children. In J. W. Segal, S. F. Chipman, & R. Glaser (Eds.), Thinking and learning skills, vol 1: Relating instruction to research. Hillsdale, NJ: Lawrence Erlbaum Associates, 83-108.

Lipman, M, Sharp, A.M., & Iscanyan, F.S. (1980). Philosophy in the classroom (2nd ed.). Philadelpia,PA: Temple University Press.

Mayer, R. E. (1983). Thinking, problem solving, cognition. New York: W.H. Freeman.

McNeil, L. M. (1986). Contradictions of control: School structure and school knowledge. New York: Routledge & Kegan Paul.

McPeck, J. E. (1981). Critical thinking and education. New York: St. Martins.

Metcalf, L. E. (1963). Research on teaching the social studies. In N. L. Gage (Ed.), Handbook of research on teaching. Chicago: Rand McNally, pp. 929-965.

Morrissett, I. (Ed.). (1982). Social studies in the 1980s: A report of project SPAN. Alexandria, VA: Association for Supervision and Curriculum Development.

Morrissett, I. (Ed.). (1967). Concepts and structure in the new social science curricula. New York: Holt, Rinehart & Winston.

Nickerson, R. S., Perkins, D. N., & Smith, E. E. (1985). The teaching of thinking. Hillsdale, NJ: Lawrence Erlbaum Associates.

Norris, S. P. (1985). Synthesis of research on critical thinking. Educational Leadership, 42:8, 40-45.

Oliver, D. W., & Shaver, J. P. (1966). Teaching public issues in the high school. Logan, UT: Utah State University Press.

Palinscar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension monitoring activities. Cognition and Instruction, 1, 117-175.

Passmore, J. (1967). On teaching to be critical. In R.S. Peters (Ed.), The concept of education. London: Routledge & Kegan Paul.

Patterson, J. H., & Smith, M. S. (1986). The role of computers in higher order thinking. In 1985 Yearbook of the National Society for the Study of Education. Chicago: University of Chicago Press.

Paul, R. (May, 1982). Critical thinking in the strong sense: A focus on self-deception, world views, and a dialectical mode of analysis. Informal logic newsletter.

Perkins, D. N. (1986). Reasoning as it is and could be: An empirical perspective. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Perkins, D. N. (1984). Creativity by design. Educational Leadership, 42:1, 18-24.

Perrone, V. & Associates. (1985). Portraits of high schools: A supplement to high school: A report on secondary education in America. Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.

Powell, A. G., Farrar, E., & Cohen, D. K. (1985). The shopping mall high school: Winners and losers in the educational marketplace. Boston: Houghton Mifflin.

Resnick, L. B. (1986). Education and learning to think. Report for the Commission on Behavioral and Social Sciences and Education, National Research Council. Pittsburgh, PA: Learning Research and Development Center.

Rest, J. (1986). Moral development: Advances in research and theory. New York: Praeger.

Schrag, F. (in press). Thinking in school and society. New York: Routledge & Kegan Paul.

Segal, J. W., Chipman, S. F., & Glaser, R. (Eds.). (1985). Thinking and learning skills, Vol 1: Relating instruction to research. Hillsdale, NJ: Lawrence Erlbaum Associates.

Shaver, J. P. and Larkins, A. G. (1973). Research on teaching social studies. In R. M. W. Travers (Ed.), Second handbook of research on teaching. Chicago: Rand McNally, pp. 1243-1262.

Siegel, H. (Spring/Summer,1985). Educating reason: Critical thinking, informal logic, and the philosophy of education. American philosophical association newsletter on teaching philosophy.

Sizer, T.R. (1986). Rebuilding: First steps by the coalition of essential schools. Phi delta kappan, 68:1, 38-42.

Sizer, T.R. (1984). Horace's compromise: The dilemma of the American high school. Boston: Houghton Mifflin.

Sorenson, A.B. & Hallinan, M.T. (1977). A reconceptualization of school effects. Sociology of education, 50: 273-289.

Sternberg, R. J and Bhana, K. (1986). Synthesis of research on the effectiveness of intellectual skills programs: Snake-oil remedies or miracle cures? Educational Leadership, 44:2, 60-67.

Sternberg, R.J., & Wagner, R.K., (Eds.). (1986). Practical intelligence: Nature and origins of competence in the everyday world. New York, NY: Cambridge University Press.

Voss, J. F. (In press). Problem solving and the educational process. In R. Glaser and A. Lesgold (Eds.), Handbook of psychology and education. Hillsdale, NJ: Lawrence Erlbaum Associates.

Wiggington, E. (1985). Sometimes a shining moment: The foxfire experience. Garden City, NY: Anchor Press/Doubleday.

Wiggins, G. (in press). The student as worker. Coalition of Essential Schools, Brown University, Providence, RI.

Willis, P. E. (1977). Learning to labour. Lexington, MA: D. C. Heath.

Endnotes

1. Samples of program descriptions, conceptions of thinking and empirical work can be found in Chance (1986); Costa (1985); Nickerson, Perkins & Smith (1985); Segal, Chipman and Glaser (1985). Although very little empirical research has addressed the promotion of thinking social studies, the most thorough reviews on the topic are offered by Metcalf (1963) and Cornbleth (1985).

2. Rather than focusing directly on the teaching of informal reasoning (the topic of the conference), this analysis takes a broader view. To maximize the relevance of the inquiry to practice in the schools, it is important to approach these issues from the teacher's perspective. Social studies teachers are concerned with informal reasoning, but only indirectly as it relates to their more commonly stated objective: teaching students to think. Interpretations of that phrase may often be synonymous with informal reasoning, but much conceptual confusion on the meaning of thinking, which the teachers seem to sense, needs to be clarified before we concentrate on the apparently narrower, more technical concept of informal reasoning. Furthermore, with so little research on the nature and teaching of informal reasoning in history and social sciences, focusing upon it here would involve almost total speculation. Thus, it seems appropriate first to examine the relevance to informal reasoning of the substantial work on the more general problem of promoting higher order thinking.

3. Scholarship on these topics is represented in Mayer (1983), Chipman, Segal and Glaser (1985), Kohlberg (1981), Sternberg and Wagner (1986), and Voss (in press).

4. A summary of research that documents this criticism for social studies in available in Morrissett (1982).

5. Several authors have emphasized the importance of a novel problem that requires use of prior knowledge, but cannot be solved through routine application of algorithms, see especially Patterson and Smith (1986) and Resnick (1986).

6. Schrag (in press) develops the explorer analogy and perceptively discusses characteristics of tasks that require people to go beyond the information given.

7. The definition embraces a number of the criteria suggested by Resnick (1986). The fact that students must use information to solve a novel, challenging problem is likely to entail uncertainty, non-algorithmic solutions, self-regulation by the student, the imposition of meaning by the student, measured judgment by the student. All higher order challenges, however, need not manifest all of Resnick's criteria.

8. This is not to dismiss the significance of research and development in teaching particular forms of problem solving. That work is vital for the improvement of practice for those schools and teachers which prefer to focus their programs more specifically.

9. For summaries and critiques of research in social studies that support this conclusion, see Armento (1986), Cornbleth (1985), Shaver and Larkins (1973). See also general summaries of research on the teaching of thinking and problem-solving by Norris (1985), Sternberg and Bhana (1986), Voss (in press).

10. A number of claims made in this paper about teachers, students and conditions of schooling are based on emerging findings from a study in process on opportunities and barriers in the promotion of higher order thinking in high school social studies. The study includes analytic work as well as empirical research in five high schools.

11. Proponents of this point of view include Glaser (1984), McPeck (1981).

12. Proponents of this general position include Beyer (1985), Brown et al (1983), de Bono (1983), Herrnstein et al (1986).

13. For more thorough critiques of the skills perspective, see Cornbleth (1985), Paul (1982), Schrag (in press), Siegel (1985).

14. This point of view is developed by Cornbleth (1985), Norris (1985), Passmore (1967), Schrag (in press), Wiggins (in press).

15. Recent programs such as those described by Adler (1982), Feuerstein et al (1980), Lipman et al (1980), and Sizer (1986), try to promote thoughtfulness. Cuban's (1984) historical review, however, showed that school organization and district and state policies have consistently inhibited it.

16. The metaphor of "student as worker" has been used to signify the importance of active learning (Sizer, 1984; Wiggins, in press).

17. Experiential learning projects such as those described by Wigginton (1986) offer great promise.

18. Chi and Glaser (1986) and Voss (in press) offer general summaries of this literature.

19. Significant increases in the amount of practice could also be supported by research on opportunity to learn (e.g. Denham and Lieberman, 1980; Heyns, 1978; Sorenson and Hallinan, 1977).

20. Forms of student resistance have been documented in the studies of McNeil (1986), Powell et al (1985), Willis (1977).